Fisheries Resources

E5.F2 Pete King Wildlife Improvement Project

Lochsa/Powell Ranger Districts

Report Summary

The activities proposed in this project are unlikely to produce more than minor short-term water resource effects but would not damage or degrade aquatics resources including, water quality (beneficial uses), stream channels and or fish habitat and would not be detectible. The analysis area (area for in-depth aquatics species analysis and/or discussion) is generally the same as the project area boundary and includes the following: Pete Creek main-stem and the smaller perinnal fish bearing tributaries within the Pete King watershed which are Nut Creek, Walde Creek, Placer Creek, Polar Creek and the West Fork of Pete King Creek and the other unnamed intermittent drainages that all eventually flow out of the project area and eventually drain in to the Lochsa River.

No new road construction would occur with this project. Sediment would be reduced through road improvements derived from road maintenance. Proposed activities include vegetation treatments to improve wildlife habitat, forest health and as well as road management (improvement/maintenance) to improve water quality. Vegetation treatments and temporary road construction activities occur approximately between 1 to 10 stream miles away from the Lochsa River.

This analysis also discusses potential effects of log haul that would occur within the project area boundary and also beyond the bounds of the project area along short sections of Yakus Creek (less than 0.2miles total) west of the project area. Proposed road reconstruction would require little riparian disturbance to implement and would not result in detectible water quality changes. There are no streams within the project area that are Clean Water Act (303d) listed and/or TMDL listed for sediment impairment. However Pete King Creek is (303d) listed for temperature impairment and has an approved temperature TMDL.

This project, given the proposed action, is consistent with and complies with the 1987 Clearwater National Forest Plan (Forest Plan) and all other applicable laws, policy and regulation related to water resources and water quality. The proposed action is not expected to adversely affect aquatic resources due to the site characteristics, proximity to fish bearing stream or fish habitat, existing stream channel/habitat conditions, operational limitations and design features. Best Management Practices (BMPs) and design features would be used to specifically minimize potential for soils and water quality disturbances and would greatly reduce potential for erosion, sedimentation or reduced water quality thus protecting fish habitat integrity. All forest management that proposes timber harvest or prescribed burning would include no harvest/intentional burning, PACFISH stream buffers, leaving well established standing and downed coarse woody debris and other riparian vegetation within the RHCAs to provide protection and maintenance of stream channel habitat and water quality in the short and long term. Protection of soil productivity and re-planting of more resilient native tree species will further minimize negative water resource effects. All practical measures to minimize sediment production are included in the proposed activities including water resource protection in the planning, design and implementation phases.

Introduction

This report was developed to be included as part of Pete King Project (PKP) record as consolidation of fisheries information and effects discussions (Direct, Indirect and Cumulative). Appendix A of this report contains the Biological Evaluation (BE), which addresses sensitive aquatics species as required by Forest Service Manual (FSM) 2672.4 and Regional direction pertaining to streamlining BEs (USDA FS 1995). A separate Biological Assessment (BA) was prepared to address listed fish species and critical habitat (E5.F1).

The focus of this report is to document relevant existing conditions, trends and status (MIS, ESA-listed, and/or R1 Sensitive Species) for the aquatic species and associated aquatic habitat in the project area (table 1 and E5.F2 for full forest list). This includes the Pete King Creek watershed and small segments of streams and fish habitat (less than 0.2 miles total) outside the project area near roads that may be used for log-haul to analyze potential project effects to aquatic resources and habitat.

Another key focus of this analysis will be on potential direct, indirect, and cumulative effects that could appreciably harm or diminish fisheries habitat or populations. Elements of the proposed action that would not cause potential for appreciable affects to the fisheries resources are discussed only briefly to give explanation why there is limited concern. This report also provides the information necessary to demonstrate how the project is consistent with all water resources-related management direction in the Forest Plan (E5.F3), as well as, other applicable laws, rules, and regulations.

A complete and detailed description of the project area, purpose and need, and the proposed project alternative can be found in the PKP Environmental Assessment (EA).

Table 1 MIS, ESA-listed, and Sensitive Species Considered

Species	**Special Status***	**Considered in this Analysis**	**Rationale**
Westslope cutthroat trout *Oncorhynchus clarki lewisi*	S	Yes	Present in the project/analysis area and in other portions of the larger surrounding subbasins in Idaho (IDEQ 2005).
Snake River steelhead trout *Oncorhynchus mykiss gairdneri*	MIS, T	Yes	Native to and present in the project/analysis area. ESA listed as threatened and Pete King Creek and several of its tributaries are mapped as designated critical habitat

Table 1 MIS, ESA-listed, and Sensitive Species Considered

Species	**Special Status***	**Considered in this Analysis**	**Rationale**
Redband trout *Oncorhynchus mykiss gairdneri*	S	No	There are no known rainbow trout populations that are segregated from steelhead trout in the project area. There would be no effects to this species since they do not occur in the area.
Snake River spring/summer chinook salmon *Oncorhynchus tshawytcha*	S	Yes	Hatchery form of Spring chinook salmon occur within the project area streams.
Snake River fall chinook salmon *Oncorhynchus tshawytcha*	T	No	Fall chinook do not occur in or near the project area but do occur downstream in the mainstem Clearwater River. Designated critical habitat is over 30 miles downstream from the project area. There would be no impacts to fall chinook as a result of the project (Not further discussed in this analysis).
Bull trout *Salvelinus confluentus*	T	No	Not found in or near the project area (not further discussed in this analysis). Pete King Creek has no Designated Critical Habitat (PF)
Pacific lamprey *Lampetra tridentata*	S	No	Pacific lamprey are not known to occur in the project area. Lamprey may occur upstream in the mainstem Lochsa River although densities would be very low. There would be no impacts to Pacific lamprey as a result of the project since there is no habitat and it would not produce measurable sediment to streams or increase stream temperatures (not further discussed in this analysis).
Western pearlshell mussel *Margatifera falcate*	S	No	No known population within the project area (not further discussed in this analysis).

*MIS = Management Indicator Species; S = R1 Sensitive Species; T = ESA “Threatened” species

Description of the Purpose and Need for the Proposed Action

For a complete description of the purpose and need for this project, please see the Environmental Assessment.

Description of the Proposed Action

The Environmental Assessment describes the project objectives and corresponding resource needs and descriptions of stand treatments and road management activities.

Required Design Features and/BMP's

The following design features are required to ensure compliance with the regulatory framework and reduce the risk of adverse impacts to water resources including fish habitat.

1. PACFISH/INFISH Riparian Management objectives, standards and guidelines would be applied to protect aquatic resources, to include Riparian Habitat Conservation Areas (RHCA) default buffers. PACFISH/INFISH default buffers are to be used to define timber sale unit boundaries where water features are present. No timber harvest is to occur within 300 feet of fish-bearing streams, 150 feet of perennial non-fish bearing water, 50 feet of intermittent streams, 150-foot slope distance from the edge of wetlands larger than one acre.

   Anticipated Effectiveness: Delineation and compliance with PACFISH/INFISH, a component of the Clearwater Forest Plan, is intended to reduce or eliminate the potential for adverse effects to non-anadromous fish and other aquatic organisms. The specific RHCA buffers for timber harvest have been monitored on the Nez Perce-Clearwater National Forest (NP-CLW) and have been found to be effective in meeting the objective (Smith 2015, 2016) and BMP and PIBO monitoring (E5.F4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 16).

   "Riparian Habitat Conservation Areas are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. Riparian Habitat Conservation Areas include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by, 1) Influencing the delivery of coarse sediment, organic matter, and woody debris to streams, 2) Providing root strength for channel stability, 3) Shading the stream, and 4) protecting water quality (Naiman et al. 1992)."

   Past monitoring efforts and current literature (Sweeny and Newbold 2014) show that the application of vegetative buffers around aquatic dependent ecosystems are effective at maintaining ecological processes for aquatic ecosystems.

   In addition to protecting habitat within the RHCAs, PACFISH/INFISH (USDA FS 1995a) notes that the vegetation and debris within riparian buffers act as "filter strips" that are generally effective in protecting streams from sediment carried by non-channelized flow. Activities associated with vegetation management (primarily yarding and road construction/reconstruction), and road decommissioning/obliteration activities would disturb soil at the activity sites. Some of this soil would then have the potential to be transmitted downhill until stabilized by vegetation growth, but because of PACFISH/INFISH buffers, most of the soil disturbed by the proposed activities would be scores or hundreds of feet or more from stream channels. Vegetation, downed woody material, duff, or topographical features should intercept and stabilize any mobilized soil before reaching a stream. Growth of vegetation on portions of harvest units and road prisms would be enhanced by soil de-compaction, fuels treatments, live transplants, duff placement, woody debris application, or seeding.

Preliminary monitoring results from the PACFISH/INFISH Biological Opinion (PIBO) monitoring across the Upper Columbia River Basin indicate improving trends in pool depth, bank stability, large wood frequency and volume, and the presence of spawning substrate (<3 inches in diameter) as a result of PACFISH implementation (USDA Forest Service 2009) (PF). Significant decreases in the percent of fine substrates in pool tailouts has also been observed in managed watersheds. PIBO results for the Salmon River showed that managed areas had similar habitat complexity as those in unmanaged watersheds (Archer et al, 2016; Meredith, 2013).

Local monitoring of 23 miles of RHCAs and 5.5 miles of temporary road after timber harvest and burning of the units was completed on the Lochsa District in 2014 (USDA Forest Service, unpublished data) (PF). There was no evidence of sediment moving from harvest units into RHCAs or sediment moving from temporary roads (with no stream crossings) into harvest units or RHCAs. The thick vegetation that makes up RHCAs acts as an excellent, virtually impenetrable, filtering source for overland sediment flow. Retaining downed woody debris within the harvest units also provides structures that capture sediment and slow or stop its movement down the slope.

2. Haul routes would be maintained to BMP standards, including proper drainage, adequate stream culvert capacity, and cleared and functional cross-drains. Measures are to be taken to prevent or minimize sediment from entering streams during project activities and in the long-term, such as (a) placing removable sediment traps below work areas to trap fines; (b) when working instream, removing all fill around pipes prior to bypass and pipe removal (where this is not possible, use non-eroding diversion); (c) revegetating scarified and disturbed soils with grasses (weed free) for short-term erosion protection and with shrubs and trees for long-term soil stability; (d) mulching with native materials, where available, or using weed-free straw to ensure coverage of exposed soils; (e) dissipating energy in newly constructed stream channels using log or rock weirs; and (f) armoring channel banks and dissipating energy with large rock whenever possible.

Anticipated Effectiveness: Because haul routes would cross RHCAs and stream channels, the proper preparation and maintenance of these roads during periods of timber haul (which places unusual stresses on the existing roads) would lessen the potential for fine sediment transmission and atypical flow routing to streams, thereby maintaining stream channel characteristics.

3. Material cleaned from culverts would not be flushed or deposited in stream courses, ditches and catch basins would only be cleaned as needed to function, and undercutting the toe of the cut slope would be avoided.

Anticipated Effectiveness: This design feature would lessen the potential for degradation of project streams, both in terms of fine sediment transmission and flow routing.

4. Avoid hauling and other heavy equipment traffic during road conditions when the road surface rutting would occur.

Anticipated Effectiveness: This design feature would lessen the potential for degradation of project streams, both in terms of fine sediment transmission and flow routing.

5. PACFISH/INFISH – Roads Management: For each existing or planned road, meet the Riparian Management Objectives and avoid adverse effects on listed anadromous fish by:

    a. Minimizing road and landing locations in Riparian Habitat Conservation Areas.
    b. Avoiding sediment delivery to streams from the road surface.
        i. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe.
        ii. Route road drainage away from potentially unstable stream channels, fills, and hillslopes.
    c. Avoiding disruption of natural hydrologic flow paths.
    d. Avoiding sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting Riparian Habitat Conservation Areas in watersheds containing designated critical habitat for listed anadromous fish.

6. Avoid direct ignition of fuels within RHCA's or live clumps of trees. Allow prescribed fires to back into these areas.

Anticipated Effectiveness: This design feature allows for fuel treatments in upland areas without requiring the construction of fire lines along the RHCA edge. The typical result is that fire may burn into outer areas of RHCA, but sufficient duff and vegetation would remain to prevent adverse near-stream vegetation and sediment transmission effects.

7. Design prescribed burning projects and prescriptions to contribute to the attainment of the Riparian Management Objectives.
8. Soil Resources design features would tend to reduce the potential for erosion and/or transmission of fine sediments to riparian areas and stream channels.

Anticipated Effectiveness: Applied to harvest areas, these design features would lessen the potential for degradation of project streams.

9. The Forest(s) will use best management practices to control pollutant sources under their jurisdiction (see Appendix B of this report for the full list associated with this project).

Design Features Overall Anticipated Effectiveness: High. The 2016 Idaho Interagency Forest Practices Water Quality Audit (Stone & Hess, 2016) describes how the erosion control measures observed in the statewide audit are generally effective when properly installed and maintained. The audit also acknowledged that the Forest Service had a compliance rate of 97% during the last 4-year audit cycle and averaged 99% compliance with best management practices since 1996. The same audit found that road measures such as gravelling, rocking ditches, and installing rolling dips and waterbars were effective at reducing erosion (see Hydrology Report).

Cause-Effect Relationships

The Pete King project area serves as the analysis area for this report. This includes direct, indirect, and cumulative effects discussions with regard to aquatic species and riparian habitat.

A review of recent Pete King Creek aquatic habitat survey information and population (fish sampling) data (E5.F16, 17, 18, 19, 20 and 21); the 2019 project area streams review and Proper Functioning Condition Survey (E5.F16); as well as 2019 Pete King Cobble embeddedness data (E5.F19), were used to assess fish presence and aquatic habitat conditions.

Important fish species are found within the project area (E5.F2, 17, 18, 21 and Map E5.F20). Streams within the project area are functioning properly hydrologically, exhibit high stream bank stability and resiliency and contain moderate amounts of large woody material in many reaches (E5.F16 and E5.F21). Much of Pete King Creek is a perennial fish bearing stream and the largest stream within the project area. The remaining streams in the analysis area are smaller (4-2ft. wide) and many are steep (>20% slope). Many unnamed drainages that are either intermittent or seasonally drain into Pete King Creek (E5.F16 and 21) which eventually empties into the Lochsa River nearby. This analysis does not include the Lochsa because including this river would dilute any effects that may be caused by the project.

Suitable fish habitat is an essential part of maintaining healthy fish populations. For the purpose of this assessment there are five key factors that can affect fish and fish habitats within the project area and changes to these factors would determine a cause-and-effect relationship. These are in-stream and riparian ***large woody debris (LWD)***, ***riparian zone/steam channel function, connected habitats*** (no barriers) and ***riparian shade*** (stream temperatures) from trees and other vegetation as well as ***fine sediment*** (substrate)***.*** For the purposes of this assessment these 5 factors constitute the fish habitat element that makes up cool, clean, connected and complex which are important for maintaining healthy fish populations and will help guide discussion regarding existing conditions and potential effects related to the proposed action. This assessment will discuss existing conditions and potential changes caused directly, indirectly or cumulatively by the proposed activities to any of these factors that affect the fish habitat element (Table 2). However this project is specifically designed using BMPs and design features (See EA) shown overtime to be highly effective in protecting stream habitats (E5.F4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and E5.H36) and will maintain every habitat factor described here. Furthermore these practices were developed to ensure adherence to the CW forest plan and all relevant state and federal laws, regulations and guidelines.

Resource Indicator and Indicator Measure

Table2. Resource Indicators and Measures for Assessing Effects to Fish Habitat.

Resource Element	Measure (Indicator)
Fish Habitat	• Changes to water *temperatures* • Changes to instream *large wood* • Changes to *sediment levels* in streams • Changes to riparian zone *function* (overall stream/habitat condition) • Changes to habitat *connectivity*

Large Woody Debris: Creates pools, cover and complexity for fish and supports stream channel and riparian stability. Can inhibit and/or moderate the movement of fine sediment throughout stream reaches.
Overall Stream Channel Function: A good indicator of stream channel health, stability, resiliency and susceptibility to changes given environmental effects.

Connected habitats: Connected habitats allow fish to move freely throughout a drainage and seek refugia when needed and to access spawning and or rearing area to the extent naturally available.

Riparian shade: Helps to promote and maintain cool stream temperatures important for native fish.

Fine Sediment: Sediment delivery to streams is an important natural hydrologic and geomorphologic process in forming stream channels and fish habitat. However, too much sediment delivered to streams can occur as well which can reduce the quality of fish habitat by diminishing or burying spawning substrate, filling in pools and even causing morphological changes to stream channels. Lower gradient stream reaches typically store the majority of sediment that comes into a stream system. In managed watersheds decreases in sediment can typically result in improved instream conditions for aquatic organisms and conversely increases in sediment can diminish the quality of instream condition.

Methodology

The objective of this analysis is to disclose the potential impacts or benefits of the Proposed Action Alternative and the No Action Alternative on the fisheries resource in the project area. Fisheries resources will include any threatened and endangered species, sensitive species, and management indicator species that are known to be present, and the aquatic habitat that supports them. Each alternative is analyzed based on the potential to change indicators (Table 1) from their existing condition. To achieve this, existing fish population and aquatic habitat conditions in the project area are described to establish a reference condition which will provide the basis to which proposed project activities can be evaluated. Once the reference condition has been established, potential direct and indirect effects associated with the project, as well as cumulative effects associated with past, present, and reasonably foreseeable activities throughout the analysis area, are analyzed to disclose the potential effects on the fisheries resource.

Information Sources:

Data and documents used to support this analysis include:

- Project proposal and associated alternative (see EA)
- Clearwater Forest Plan and supporting documents
- Lochsa/ Powell District files and databases (see PF)
- Pete King project hydrologic analysis report and associated WEPP modeling (Hydrology Report)
- PACFISH/IN
- FISH Biological Opinion (PIBO) Monitoring Program data (PF)
- Cobble Embeddedness survey data (PF)
- Published and unpublished literature (see this Fisheries Report and the Hydrology Report)
- Aerial photographs and LiDAR (PF)
- Geographic information systems (GIS) files and layers
- Fish distribution surveys (PF)
- General stream and habitat surveys (PF)
- Road and culvert Information (PF)
- Historical records (PF)

There always remains some level of uncertainty with any analysis that attempts to predict the effects of management activities on the natural environment. Ecological components, including habitat and the species it supports, can have highly complex relationships that continue to evolve and are not always consistent from one area to the next. These inconsistencies make it difficult to understand and disclose all potential interactions. To help alleviate some of this uncertainty, this analysis will use the most applicable scientific literature and the best available data for this area.

Description of the Bounds Used for the Effects Analysis

Spatial Boundary

Project Area

The Pete King Wildlife Restoration project is located in the southwest portion of the Lochsa/Powell Ranger District in Idaho County, Idaho and encompasses about 17,650 acres of National Forest System lands within T33N, R5E, Section 13; T33N, R6E, Sections 1-3, 8-28; T33N, R7E, Sections 6-8, 16-21, 28-31; T34N, R6E, Sections 34, 36; and, T34N, R7E, Section 31 (Boise Meridian).

The main geographic scope of the analysis for fisheries resources is the Pete King 6th code watershed, a tributary to the Lochsa River (E5.H36 and see EA). Routes used for log-haul outside of this watershed will be considered and discussed for potential site specific effects where there is potential for effects to occur along the routes (See EA, and E5.F22)

The project area consists almost entirely of federal ownership bordered by additional lands within the Clearwater National Forest. Lands west of the project area consist of industrial timberlands, private timberlands, state timberlands, and Nez Perce Tribal land.

Cumulative Effects Area

Cumulative effects are those which would be realized if the effects of the proposed action(s) are added to the effects of past, present, and reasonably-foreseeable future actions. For the purpose of this report, the primary cumulative effects area for analysis on aquatic habitat and biota is the 17,700-acre Pete King Creek subwatershed project area because the Pete King Creek watershed contains most of the proposed activities that could affect water quality and fish habitat (EA Map). Although effects on fisheries typically propagate downstream from areas of activity because hydrologic and soil characteristics are heavily affected by gravity and because aquatic organisms are largely physically constrained by the boundaries of waterbodies any effect beyond the project area boundary would be diluted and would be undistinguishable and therefore would not yield a meaningful discussion.

However, effects of a small portion of road reconstruction and/or maintenance along with log-haul routes traveling outside of the project area and into other drainages will be discussed and assessed for effects to the fisheries resource in those areas. These log-haul effects however are expected to be minimal and would be unlikely to lead to a measurable or cumulative effect where haul occurs.

Robinson 2020 also states that since the overwhelming majority of proposed activities would occur in the Pete King Creek sub-watershed and the remainder of activities would be spread over multiple sub-watersheds, this analysis will focus on Pete King Creek. It is very unlikely that the limited extent of activities in other sub-watersheds would result in detectable effects at the sub-watershed scale.

The following past, present, and reasonably foreseeable actions were considered during the cumulative effects analysis for water related resources. Only activities with effects that overlap the spatial and temporal boundaries of the Pete King Restoration project as described above were considered. Some of these items are discussed in greater detail in the “Existing Conditions” section below.

- Ongoing aquatic habitat restoration work including the replacement of fish passage barriers with Aquatic Organism Passage (AOP) structures (for example, recent installation of an AOP where FSR #418 crosses Pete King Creek)

- Projects authorized by the North Lochsa Face SEIS and Record of Decision (includes timber harvest, prescribed fire, road obliteration, road storage, removal of sediment traps in Walde and Pete King Creeks, and riparian planting along Pete King Creek; includes the Where’s Walde, Polar Ice Stewardship, and Cabin Stewardship projects.

- Projects authorized by the Interface Fuels II EA, FONSI, and Decision Notice (includes timber harvest and prescribed fire)

- Wildfire and fire suppression activities
- Recreational activities (e.g., hunting, fishing, dispersed camping, OHV trail use)
- Road maintenance activities

Temporal Boundary

Sediment-related effects, if any, would recover within 2-3 years from the completion of activities as vegetation regenerates, soil is stabilized, and erosion returns to background levels (William J. Elliot & Robichaud, 2001; Luce & Black, 1999; Luce & Black, 2001)

Existing Conditions

Beneficial Uses and Water Quality Status

Beneficial uses and water quality criteria and standards are identified in the State of Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 58.01.02). Designated beneficial uses include cold water aquatic life and secondary contact recreation for Pete King Creek and its tributaries and salmonid spawning for Pete King Creek from its mouth to Walde Creek (E5.H36). Pete King Creek from its source to Walde Creek supports its beneficial uses; however, Walde Creek and Pete King Creek downstream of its confluence with Walde Creek are listed as water quality limited for temperature in the 2016 IDEQ 303(d)/305(b) Integrated Report (Steimke, 2018). An approved Total Maximum Daily Load has been developed by the Idaho Department of Environmental Quality (State Technical Services Office, 2012).

Pete King Sub-watershed Fish Species

There are approximately 20 miles of main-stem and tributary fish-bearing streams within the Pete King Creek watershed validated by extensive surveys (E5.F20 and 21). The smaller perennial fish bearing tributaries within the Pete King watershed are Nut Creek, Walde Creek, Placer Creek, Polar Creek and the West Fork of Pete King Creek. These areas occur in the main-stem and lower reaches of the tributaries where stream gradients are relatively low (<6%) and suitable habitat for fish spawning and rearing is present (Map 1, table 1, E5.F17, 20, 21). Fish sampling surveys and habitat information was used to determine where the extent of presence and of habitat available for the three key native fish species found in the watershed (Table 1). Within the Pete King watershed there is approximately 20 miles of westslope cutthroat habitat, 9 miles of steelhead/rainbow trout habitat and 4 miles of Chinook salmon habitat. Salmonids observed during a 1991, 1997 surveys of Pete King Creek (E5.F21) were steelhead/rainbow trout, westslope trout, and Chinook salmon. No bull trout have been observed or recorded in the watershed (E5.F20 and F21). Other fish sampling done by the State of Idaho (IDEQ) confirms these conclusions for species present/absent within the system (E5.F23). ESA designated critical fish habitat mapping also corresponds to these conclusions (E5.F20). There several more miles of perennial and/or intermittent streams and stream reaches within the Pete King sub-watershed that do not contain fish due to natural barriers, low flows, small size, high gradients and/or a general lack of habitat. The status of all native species historically found near the project area is described in table 1.

Westslope cutthroat trout (WCT)

Westslope cutthroat trout (WCT) is considered a ***Region 1 sensitive species*** and are native to Snake River tributaries in Idaho (including the Clearwater and Lochsa river basins) (Behnke 1992) and are often the most abundant (or only) native salmonid inhabitants of the low-order streams in these drainages. The species naturally coexists with anadromous rainbow trout in many Idaho streams with varying degrees of hybridization (Weigel et al. 2003). Cutthroat presence was mapped based on sampling information for the project area (E5.F20, F21 and F23) and appear to be prevalent throughout the Pete King drainage.

Cutthroat trout require cold water and relatively low levels of fine sediment to breed and survive (McIntyre and Rieman 1995), so the presence of individuals of the species, especially juveniles, indicates relatively high water quality. 2019 stream channel/habitat assessment (E5.F16) indicated that Pete Creek and its tributaries mapped as containing cutthroat trout were functioning properly and showed stable stream banks and good overall habitat quality for rearing and spawning.

Snake River steelhead - ESA Listed, Designated Critical Habitat, Forest Plan MIS

MIS for the project area is steelhead/rainbow trout, based on the Forest Plan, and was also analyzed as an ***ESA-listed species (E5.F17 and Table 1 and Draft BA*** E5.F15***)***. Rule document issued on August 18, 1997 in the Federal Register issued a final determination that Snake River steelhead (*Oncorhynchus mykiss*) are ESU's or "species" that are listed as Threatened (also see BA). ***Designated Critical habitat*** has also been mapped and identified for Snake River steelhead within Pete King Creek and several of its tributaries (E5.F15 and 20). Steelhead are also considered to be a NPCW Forest Plan Management Indicator Species (MIS) (Table 1).

Snake River Basin steelhead are summer steelhead, as are most inland steelhead, and comprise 2 groups, A- and B-run, based on migration timing, ocean-age, and adult size. Snake River Basin steelhead enter fresh water from June to October and spawn during the following spring from March to May. B-run fish, which occur in the Clearwater River Basin, enter fresh water from late August to October, passing Bonneville Dam after 25 August. B-run steelhead are thought to be age 2 ocean fish. They are 75 to 100 mm larger than A-run steelhead of the same age due to their longer residency in the ocean. Unlike other Pacific salmon, steelhead are iteroparous, meaning that they are capable of spawning more than once before they die. However, most steelhead in the Clearwater Basin survive to spawn only once.

Spawning and initial rearing of juvenile steelhead generally take place in moderate gradient (generally 3-5%) streams. Females dig redds and deposit 1,500 to 6,000 eggs in pea to baseball size gravel. The eggs hatch in about 35-50 days, dependent upon water temperature. The alevins remain in the gravel 2 to 3 weeks until the yolk sac is absorbed and then emerge as fry in late spring and begin to actively feed. Egg to fry survival is usually near 15%. Snake River Basin steelhead usually smolt as 2 or 3 year olds.

Productive steelhead habitat is characterized by complexity, primarily in the form of large and small wood and/or boulders and rock. Juveniles will take advantage of microhabitats to seek refuge from high water velocity and/or temperatures. Juveniles may move around in a basin to take advantage of favorable habitat. Fry prefer protected and complex edge habitat with low velocity (<0.3 ft/s). They are seldom observed in water over 15 inches deep. Summer rearing takes place primarily in the faster parts of small and deep scour pools with some form of surface cover and wood or medium to large substrate (cobble or boulders). Other important habitat components for juveniles are pools with "bubble curtains", undercut/scoured areas, pocket water in deep riffles and rapids. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Small tributaries and lakes are probably important winter habitat. As juveniles get older, some tend to move downstream to rear in larger tributaries and main-stem rivers.

Wild, indigenous steelhead, unaltered by hatchery stocks, are rare and may only be present in about 25 percent of the current steelhead trout distribution. Within the Central Idaho Mountains, recent steelhead trout runs are described as critically low. Key factors to the decline of steelhead trout in the Pacific Northwest include predation and competition from introduced fish, blocked access to historical habitat, passage mortality at major dams, habitat degradation, hatchery interactions, and harvest.

Populations of steelhead/rainbow trout require relatively cold water and low levels of fine sediment to breed and survive, so the presence of individuals of the species, especially juveniles, indicates relatively high water quality. The abundance of wild anadromous steelhead in the project area is also highly affected by migratory conditions in the Snake and Columbia Rivers, and by forage abundance and other rearing conditions in the Pacific Ocean.

Spring/Summer Chinook Salmon (CH)

Spring/Summer Chinook Salmon are native to the Clearwater and Salmon River basins, but extirpated from the basin in the 20th Century and re-introduced with non-native (i.e., not ESA-protected) stocks. ESA-listed individuals migrate through and rear in the Snake River main-stem, which is Critical Habitat (79 FR 75449), but no CH is present in the Clearwater River basin. Today, a hatchery form of spring chinook are found in the project are and are considered a Region 1 sensitive species

Pete King Creek Watershed/Fish Habitat Conditions

Pete King main-stem is a fourth order tributary to the Lochsa River. In forested ecosystems woody debris plays a particularly important role in smaller 1st and 2nd order streams (which are the majority of the stream in the project area), since it slows stream flows, dissipates energy, stores organic and sediment materials, and decreases potential for channelization and loss of fine material (Jackson and Strum 2002). Large woody debris in riparian areas are important in stabilizing stream channels and helping to store and spread fine sediments and sort gravels. The U.S. Forest Service has operated sediment traps (photo 2) in the drainage for many years in order to trap and store sediment. Sediment is periodically physically removed from the stream at these sites and taken offsite.

Pete King watershed ranges from 450 to 1591 meter in elevation. Predominate landtypes within the Pete King Creek watershed include moderate relief rolling uplands, low relief rolling hills, mountain slopelands, and stream breaklands. The lower mainsteam of Pete King Creek is bordered by a floodplain of moderate width.

Forest Service managed lands in Pete King Creek are dominated by mixed conifer tree species in both upslope and riparian areas. Portions of the main-stem of Pete King Creek contains meadow habitats dominated by tall shrubs, grasses and forbs. The natural major disturbances that contribute to aquatic habitat development in project area streams are infrequent fire and large flood events, and to a lesser extent landslides, and windthrow events. These disturbances provide both large woody material and substrate which is important in forming and maintain complex fish habitat to streams under natural conditions.

Pete King Creek is a moderately steep stream with a mean gradient of 4.8%. Channel types consist of A2, A2a, A3, A4 and B5 in the mid to upper end of the drainage and B2 and B3 in the lower 4 miles indicating relatively steep and confined channels. The substrate is predominantly gravel and cobble. The environmental baseline data was determined by supporting data in the critical reaches of PK-14 and PK-15 (the lowest two reaches) (E5.F21 from Habitat conditions and salmonid abundance in the Pete King Creek drainage, Lochsa Ranger District, summer 1997, Clearwater Biostudies 1998). The critical reach was selected for more extensive investigation because it is the most appropriate channel type (lower gradient response reach relative to other reaches in the watershed) present (from Rosgen stream channel classification) to show impacts. The critical reach is a B3 channel type.

It is important to note that streams in the Pete King Drainage typically have elevated levels of fine sediment in their beds as a consequence of unique natural geologic features. The stream, therefore, has a tendency to be sediment surplus and energy limited. Historic natural forest fires and historic forest management activities (pre PACFISH RHCA protection and modern BMP implementation) in the headwaters have also contributed to erosion and sedimentation to the watersheds stream courses. Historic fires that burned heavily in the riparian areas along with historic riparian logging removed large woody debris and delayed recruitment of new inputs large woody debris (E5.F21).

Long-term Forest Service sediment monitoring in Pete King Creek indicates an overall decreasing trend in percent fines in suitable steelhead spawning habitat from 1985 to 2014 and Archer and Ojala (2016) found that stream habitat conditions in the Lochsa River subbasin generally improved between 2001 and 2015. These findings are similar to those recently reported by Roper et al. (2019) demonstrating that maintaining Riparian Habitat Conservation Areas helps improve salmonid habitat conditions. Additionally, stream data collected by the Idaho Department of Environmental Quality's Beneficial Use Reconnaissance Program shows that index scores for stream macroinvertebrates, fish, and stream habitat improved in Pete King Creek between 1996 and 2010 (E5.H36).

Monitoring data from 2004 to 2014 found Pete King Creek to have highly stable stream banks (>90%).[1] Lower Pete King Creek has a Relative Bed Stability index value of between 1.3 and 3.2, indicating that there is a relatively low likelihood that channel instability would occur as a result of additional small peak stream flow increases (E5.H36).

Recovery trend of the riparian areas along most of the fish bearing tributaries is a positive, but slow process. Practically no timber harvest within 100-150 feet of fish bearing streams has occurred within the last 30 years. Due to PACFISH direction within the Forest Plan there is none planned in the future. Streams in the Pete King Creek watershed were assessed in 2002 and were found to be meeting the Forest Plan water quality standards and percent sediment yield over natural conditions criteria (hydrology report).

Vegetative conditions within riparian areas should continue to improve and provide additional streamside cover and potential woody debris recruitment. There has been very little road construction within the project area over the past 20 years.

2019 stream channel condition assessments performed by the project fish biologist and project hydrologist found that almost all main-stem stream reaches were functioning properly and channels had stable stream banks and ample riparian vegetation and instream woody debris and showed signs of resiliency (Photo 1) (E5.F16). Overall, analysis area stream channels were found to be stable, resilient, and well vegetated maintaining moderate amounts of LWD and other stabilizing structures, such as boulders and larger angled rock supported by vertical bed rock controls. Furthermore the project area stream channels appear to have maintained stability and resiliency over time given the well vegetated stream banks, in channel LWD structure that has evidently remained intact and in place within the channel overtime (Photo 1) (E5.F16).

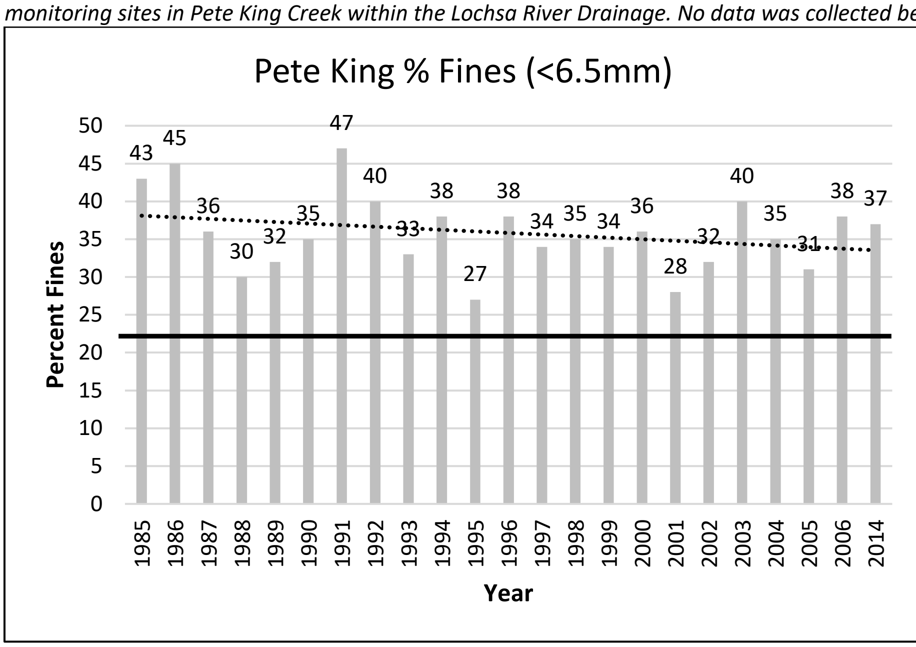
Point bars and substrate appear to have had little movement or disturbance over time given the abundant substrate mosses and other riparian plant growth in these areas (E5.F16).

As previously discussed decreases in sediment can typically result in improved instream conditions for aquatic organisms and conversely increases in sediment can diminish the quality of instream condition.

To measure this trend pebble count data has also been collected since the 1980s in the Pete King sub-watershed main-stem (Figure 1). It is used to describe the different size classes of substrate in a stream (i.e. sand size particles to boulder sized). The smaller particles are referred to as “fines” and are typically 4mm in size or smaller (very small gravel to sand size). Desired conditions for percent fines are typically 15-20% or less. The percent fines using pebble counts are not comparable to cobble embeddedness levels. The first measures substrate size and the latter measures how much the larger substrate is embedded by the fine sediment.

Long term pebble count data collected in Pete King Creek indicates a decline in the percent of fine sediment. Monitoring sites in Pete King show some annual variability but overall decreasing trends in fines since 1985 (Figure 1). The site for monitoring in Pete King Creek was designed to assess the effects of road decommissioning on instream fine sediment.

Figure 1. Comparison of average percent fines (<6.5mm) for years 1985 to 2006 and 2014 at long term substrate (coring) monitoring sites in Pete King Creek within the Lochsa River Drainage. No data was collected between 2007 and 2013.



Note: Black line denotes Forest Plan desired conditions; the long term average was 35%

Photo 1. Pete King Creek Mid-Drainage Reach Showing Shaded Stable Vegetated Streambanks, Stable Substrate and Woody Debris

Much work has been done over past two decades to improve fish habitat within the Pete King sub-watershed. Approximately 55 miles of road have been either decommissioned/obliterated or stored within the project area over the past 25 years and about 65 miles total since the mid-1980s' (F5.F21 and E5.H36). Obliterating/decommissioning roads has decreased landslide potential in the watershed and has minimized direct connections to the stream networks and reduced sediment delivery to streams (Photo 2). Roads that have been stored and/or closed can also have similar beneficial effects as decommissioning.

Photo 2. Pete King Creek Watershed Recent Road Obliteration Showing Stabilized Road Bed Eliminating Erosion

Instream structures have recently been placed in the Pete King main-stem to help improve fish habitat by increasing pools, reducing sedimentation and stabilizing stream banks (E5.F21) (Photo 3). Photo 3 is an example of one of many similar structures placed. Sediment from the structure are periodically removed.

Photo 3. Pete King Creek Beaver Analog Trapping and Storing Sediment

Man made fish passage barriers were recently removed and replaced with crossing structures that pass all aquatic native species (See Photo 4.). There are now no known manmade fish passage barriers within the Pete King Sub-watershed.

Photo 4. Recently Built Fish Passage Stream Crossing Structure (AOP)

Cobble Embeddedness/Water Quality

Cobble embeddedness data collected near the mouth of Pete King Creek since 1997 has been variable with values ranging from 29 to 71% (E5.F21 and E5.H36). Cobble embeddedness measured, in the key response reach, during the summer of 2019 was 50% (Hydrology Report), which exceeds the Desired Future Condition of less than 35% as per Jones and Murphy 1997 (E5.F24). However, data from several sources as previously mentioned and as discussed in the hydrology report suggests that sediment conditions within the subwatershed are trending in the right direction.

Monitoring data from 2004 to 2014 found Pete King Creek to have highly stable stream banks (>90%; E5.F36). Lower Pete King Creek has a Relative Bed Stability index value of between 1.3 and 3.2 indicating that there is a relatively low likelihood that channel instability would occur as a result of additional small peak stream flow increases (E5.H36).

According to the hydrology report streams in the Pete King Creek watershed were assessed in 2002 and were found to be meeting the Forest Plan water quality standards and percent sediment yield over natural conditions criteria. This may be due in part to the abundant restoration work as described above that has occurred within the sub watershed over that past several decades.

The Clearwater Forest Plan contains management direction to maintain high quality water that meets or exceeds State and Federal water quality standards and to protect all beneficial uses of the water, including native fish species (USDA Forest Service, 1987, p. II-3). Forest Plan Standards include managing water quality and stream conditions to assure that activities do not cause permanent or long-term damage to existing or specified beneficial uses and applying best management practices to ensure water quality standards are met or exceeded (F. S. U.S. Department of Agriculture, 1987, p. II-27). Appendix K lists the water quality criteria applicable to specific stream systems across the Forest. Although Pete King Creek meets the Forest Plan water quality criteria in Appendix K, it does not meet the Desired Future Condition for cobble embeddedness (CE) based on the most recent CE survey data collected at the response reach, PK15 (E5.F19). The Proposed Action is therefore subject to no measurable increase in sediment in accordance with the 1993 Forest Plan Stipulation Agreement (E5.H36), (see the "Consistency with Regulatory Framework" section below).

Streams in the Pete King Creek subwatershed are not listed by the Idaho Department of Environmental Quality as impaired by sediment in Idaho's 2016 §305(b) Integrated Report (Steimke, 2018) but are subject to the state's anti-degradation policy (IDAPA 58.01.02.051).

Water Temperature

Native aquatic species require cool stream temperatures to live and persist within the project area. Elevated stream temperatures can result from both natural and human-caused events. Land management (human activity) can increase stream temperatures by removing vegetation along streambanks, which reduces the amount of shade over the water thereby increasing the amount of solar radiation reaching the stream. Although sediment is a natural part of a stream system, stream temperatures can also be elevated by excessive sedimentation (i.e., build-up of boulders, rocks, gravel, sand, dirt, and silt), which results in a stream becoming wider and shallower, making it harder to shade and easier to heat.

The water temperature TMDL for the project area streams indicate that preserving or improving riparian shade and protecting stream channels is key to the implementation of the temperature TMDL (E5.H36).

The vegetation within the RHCAs found in the project area is primarily intact, providing the protective shade to the waterbodies. There are areas that have had timber harvest in the past and are recovering and have not fully reached their maximum shade providing potential. There are also areas where roads encroach on the RHCAs and have reduced shade for the width of the road.

For the this assessment the surrogate measure for water temperature is the area of riparian vegetation preserved or improved because direct incoming solar radiation is the dominant energy input for increasing stream temperatures with shade being the single most important variable to reduce this heat input (*Gravelle and Link 2007, Krauskopf et.al. 2010*).

Environmental Effects and Conclusions

Alternative 1 – No Action

Under this alternative, management activities as described in the EA would not occur in the project area (temporary road construction, maintenance, storage, or reconstruction, stand improvement/timber harvest, prescribed burning/fuels reduction, and wildlife habitat improvements). Other management activities would still likely occur (minor road maintenance, and control of roadside invasive plant species), but maybe not to the degree proposed in the action alternatives.

The condition of aquatic habitat and health of native fish populations in the project area streams would likely follow existing trends and remain relatively unchanged while relying on natural processes to maintain and/or restore some impacts associated with past management activities. Deteriorating road conditions and associated chronic sedimentation would likely increase without the needed level of road maintenance and this would likely present a moderate risk of altering beneficial aquatic habitat.

The following discussion will identify the potential for change of existing conditions for several *Aquatic Habitat Indicators* based on selecting the no action alternative and how this could affect the native fish populations in the project area. Keep in mind, the occurrence of some natural events and activities can be hard to predict (wildfire, 100-year floods, blow-downs, etc.) while others can be fairly certain (road use, trail use, rain-on-snow events, high-water events, weed suppression, barrier culverts, etc.).

Effects to Stream Temperatures

Management activities since 1995 have implemented PACFISH RHCAs and Best Management Practices in order to eliminate or reduce impacts to riparian areas and streams. No harvest has occurred within the RHCAs since at least the mid 1990's (more likely the 1960/70's); therefore no alteration of wood levels, riparian vegetation or streambank stability has occurred as a result of more recent management. Tree retention has also minimized potential effects to stream temperatures from management activities (FEMAT, 1993).

Solar radiation plays a large role on influencing stream temperatures (Brown 1969; Johnson and Jones 2000; Johnson 2004; Caissie 2006) and maintaining adequate overhead canopy cover along streams is likely the most effective variable to reduce that radiant heat source (Gravelle and Link 2007; Krauskopf et al. 2010). Under the no action alternative, existing riparian areas and associated riparian canopy cover over streams are generally expected to be maintained and continue to provide effective shading to keep streams cool. As a result, appreciable changes to water temperatures are not expected to occur in the project area streams.

Effects to Sediment Delivery

The No Action alternative could result in more sediment delivery from roads as well as a higher risk of culvert failures than the Proposed Action.

Because the chances for hillslope erosion, debris slides, streambank failures along with road use, and road failures are all expected to continue to occur in the project area, sediment will continue to be delivered into area streams. Whereas some sediment delivery to streams is a natural process and beneficial to aquatic ecosystems, forest roads and associated sedimentation are considered some of the most critical components affecting the aquatic environment (Gresswell 1999, Trombulak and Frissell 2000, Gucinski et al. 2001, Grace and Clinton 2007), even more so than fires and logging (Rieman and Clayton 1997). Poor road location, lack of sufficient road maintenance, and increased use above original design specifications can lead to increased sediment delivery to waterbodies (Grace and Clinton 2007, Luce et al. 2001) and increase the potential for detrimental impacts to aquatic organisms and habitat.

In general sediment contributions from roads would remain unchanged from the existing condition. While periodic road maintenance would occur on some roads as part of the ongoing road maintenance program. However maintenance activities would be substantially less than under the Proposed Action. Roads that need maintenance and areas with erosion problems would continue to act as chronic sources of sediment to streams, and undersized/failing culverts would likely continue to degrade stream channels and aquatic habitat.

Effects to Riparian Zone Function, Stream Channels and Large Woody Debris - (Fish Habitat)

Under the No Action alternative, riparian Zone Function and Stream Channels would remain unchanged from the existing condition. Changes to peak stream flows appear to contribute relatively little to channel stability or instream sediment dynamics (Hydrology Report).

Overall, analysis area stream channels and contained fish habitat were found to be stable, resilient, and well vegetated maintaining moderate amounts of LWD and other stabilizing structures, such as boulders and larger angled rock supported by vertical bedrock controls. Furthermore the project area stream channels appear to have maintained stability and resiliency over time given the well vegetated stream banks, abundant in channel LWD structure that has evidently remained intact and in place within the channel overtime (PF).

Point bars and substrate appear to have had little movement or disturbance over time given the abundant substrate mosses and other riparian plant growth in these areas. Because of the project area streams stable conditions and inherent resiliency to flow fluctuations, stream channel conditions would likely remain unaffected by water yield/peak fluctuations that are currently occurring and that may occur due to the proposed vegetation treatments given the exclusion of stand replacing wildfire.

Large wood in streams improves complexity (i.e. pools, food source, cover, and channel stability, substrate sorting, spawning and rearing) of beneficial aquatic habitat and is largely a product of an intact and properly functioning riparian area. Under the no action alternative, existing riparian areas and fish habitats in the project area are expected to be maintained and continue to function naturally. As a result, a measurable decrease in the quality or quantity of large wood in project area streams is not expected to occur.

Although, if large stand replacing wildfires were to occur they may increase water yields and peak flows, due to extensive canopy openings and reduced evapotranspiration, that could lead to stream channel erosion and reduced water quality if loss of riparian LWD and other woody structure was to occur simultaneously.

In the absence of large stand replacement type wildfires, stream channels within the watershed should continue to be maintained (see Existing Conditions Section) and should continue to function properly.

Changes to habitat connectivity (Barriers)

There a no known man-made fish barriers within the project area. This would remain the same with the no action alternative. Native fish in the project would have access to all naturally available habitats.

Cumulative Effects Summary:

This section addresses how the no-action alternative would potentially contribute cumulatively to past, present and reasonably foreseeable actions that may affect the fisheries resource in the project area. In general, if no project components are initiated and completed under the Pete King project, existing trends and conditions for this area would likely prevail. The past, present, and reasonably foreseeable activities that may have, or had, the greatest impact on the fisheries resource in the cumulative effects area and would be expected to remain unchanged include wildfire, fire suppression activities, road construction and maintenance, and timber harvest.

Effects of Fire Suppression

The effects of years of fire suppression increase the chance that a high intensity, stand-replacing fire could occur in the project area. If a large high-intensity fire does occur in the cumulative effects area, riparian habitat conservation areas could be incinerated (Pettit and Naiman 2007) leading to increased stream temperatures and sediment yield that could impact the fisheries resource as described in the section on "Indicators".

Effects of Roads

Activities associated with roads in the project area probably have the greatest potential of creating sediment that could reach the streams. If the no-action alternative is selected, there still remains the likelihood that sediment would reach streams as a result of normal forest road use and lack of road maintenance activities on many existing roads in the cumulative effects area. This lack of road maintenance would likely result in increased chronic sedimentation into streams over time (see hydrology report). Additionally, the risk of culvert failures increases through time as culverts age, rust out, break down, and plug with debris. These failures can cause portions of the roads to wash out and deliver sediment into the streams.

Effects of Timber Harvest

Vegetation management has occurred in the cumulative effects area in the past (North Lochsa Face project) and is expected to continue in the future given work authorized by the Interface Fuels II EA, FONSI, and Decision Notice (includes timber harvest and prescribed fire) and the forest plan management area direction.

The greatest concerns associated with these harvest activities are the effects of sedimentation, increased stream temperatures, and decreased aquatic habitat complexity on the fisheries resource if timber harvest occurs in riparian areas. These types of problems historically occurred before modern forestry practices were required. However, now along with PACFISH guidelines the Idaho Forest Practices Act regulates forest management on all ownerships in Idaho, including private and National Forest System lands, requires riparian buffers[2] be maintained and best management practices be followed. By incorporating adequate riparian buffers and best management practices, protection from increased sediment yield to the streams would likely be achieved. Research and monitoring results (PF) verify that when appropriate riparian habitat conservation area buffers are applied to stream corridors

[2] Riparian buffers are areas along streams where specified activities are prohibited so that riparian vegetation and stream ecosystems can be preserved. Such buffers help filter sediment from upland areas before reaching a stream, preserve streambank stability, and provide beneficial shade and nutrients.

in project areas, sediment delivery to the stream channel can be minimized or is negligible (Reid and Hilton 1998; Belt et al. 1992; USDA Forest Service 2000). Further, by maintaining mature tree overstory canopies in the riparian area, the direct effects of solar radiation on stream temperatures would be minimized and large wood recruitment to the stream would likely remain sustainable. As a result, it is unlikely that the existing condition of the fisheries resource would change substantially due to timber harvest activities on privately owned lands in the cumulative effects analysis area if the No Action Alternative is selected.

Summary of Cumulative Effects for the No Action Alterative

As stated previously, the effects of a large high-intensity fire in the project area, should it occur, would likely have negative impacts on aquatic habitat and fish populations including elevated sediment levels and elevated water temperatures. Whether a fire of such magnitude will occur is difficult to predict. However, because the likelihood is low that all problems associated with the roads and stream crossings would be addressed in a timely manner under the no-action alternative, it would be easier to predict that elevated chronic sedimentation into streams and the increased possibility of road fill-slope failures along project area creeks would continue as a result of poor road conditions. Therefore, under the No Action Alternative, roads and road-associated infrastructure would continue to deliver sediment into area streams at levels above what would be expected from well-built and well-maintained roads. Unburned fuels in the project area would continue to accumulate leading to greater potential for a high-intensity wildfire however the Fuels Report indicates that this risk is low (Fuels Report). Since the mid 1980's up to 65 miles (55 since 1995) of roads within the project area has been either obliterated, decommissioned or stored/closed and barriers removed. This work has most certainly reduced sedimentation to streams and fish habitat. Restorative work has likely had very positive cumulative effects to the native fish species in the area as shown in the fine sedimentation trends (Figure 1). However, degrading road conditions and a large high-intensity wildfire could result in further impacts to the fisheries resource in the project and cumulative effects analysis areas and could work against the improvement trend.

Determination of Effects on Sensitive Species from the No Action Alternative

Alternative 1 (No Action) may impact individual *westslope cutthroat trout* and *Snake River spring/summer chinook salmon* in project area creeks, but will not likely lead to a trend that would warrant federal listing of this species.

Rationale**:** Based on the analysis, negative impacts to aquatic habitat could continue to occur as a result of selecting No Action Alternative. These impacts could be significant if a high-intensity fire was to occur in which riparian areas were damaged. But accurately predicting whether such an event will occur in the foreseeable future (10 to 15 years) is impossible. Without repairs to sections of road (hydrology report), impacts to cutthroat and spring/summer Chinook salmon habitat could occur due to sedimentation of stream channels and fish habitat. This could affect individual fish but will not likely lead to a trend that would warrant federal listing of this species.

Determination of Effects on Management Indicator Species from the No Action Alternative

Regarding Management Indicator Species, Table 1, lists each of the aquatic species that have been selected as MIS in the Forest Plan (CNF 1987). Each species was evaluated for its potential to be affected by the proposed project. MIS for the project area is steelhead/rainbow trout based on the Forest Plan and was also analyzed as ESA-listed species. Based on the analysis presented in this report, selecting the No Action Alternative may impact steelhead habitat. However the No Action alternative would have no direct or indirect effects on steelhead because no treatments would be conducted (See BA E5.F15, for more information).

Alternative 2 – Proposed Action

Effects to Stream Temperatures

Under the Proposed Action Alternative, existing riparian areas and associated riparian canopy cover over streams be maintained and continue to provide effective shading to keep streams cool. As a result, appreciable changes to water temperatures are not expected to occur in the project area streams.

All streams and stream riparian areas on the CNF are protected under the INFISH/PACFISH-amended Forest Plan with Riparian Habitat Conservation Areas (RHCAs). The default dimensions of these RHCAs vary with stream type, with fish-bearing (FB) perennial streams afforded 300-foot buffers, non-fish bearing (NFB) perennial streams 150-foot buffers, and NFB intermittent streams in the Pete King drainage with 100-foot buffers.

The stream reaches and riparian areas that contain fish habitat would be largely protected from potential direct and indirect adverse effects through application of the RHCA buffers because most project activities, including timber harvest and yarding, would be prohibited in the buffer areas. In addition to greatly limiting direct effects to individual fish, limits to activities in RHCAs should reduce or eliminate potential effects to existing stream shade. NP-CNF monitoring has shown that default RHCA buffers are very effective in eliminating impacts on stream channels (Smith 2015, 2016) and BMP and PIBO monitoring (E5.F4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 16). This is because RHCAs are intended to protect vegetation, soil, microclimate, and other components of riparian habitat, both for the sake of the riparian areas and their flora and fauna, but also to protect waterbodies and their biota.

Effects to Sediment Delivery

Temporary Road Construction

Effects to fish and/or fish habitat within the project area from the proposed temporary road construction would likely be undetectable and/or would not be appreciable. Fish habitat would remain intact and would not be diminished by this proposed activity. Robinson 2020 concludes that the effects of temporary road construction to water quality would be minimal because of the lack of hydrologic connection between temporary roads and streams and the limited amount of time that they would exist on the landscape. Temporary roads would not enter Riparian Habitat Conservation Areas or cross streams.

Furthermore best management practices would be used to greatly reduce erosion potential (BMPs #15.02, 15.06, & 15.09) and by suspending construction and haul during wet conditions (BMPs #15.04 & 15.23). Within 5 years of project completion (including site preparation and planting), temporary roads would be rendered hydrologically stable through recontouring/obliteration (BMP #15.25). Recontouring/obliterating 0.2 mile of temporary road built on existing road prisms would be a slight benefit to water quality and watershed function that would not occur under the No Action alternative (E5.H36).

Environmental Effects of Road Maintenance and Reconstruction

The proposed 42 miles of road maintenance may reduce sedimentation to streams and fish habitat over the existing conditions. Road maintenance would improve drainage by replacing, upgrading, or installing new culverts, and/or cleaning and armoring ditches where necessary. Reducing long-term chronic sediment delivery sources to streams and the risk of road fill failures would constitute an important improvement to fish habitat quality and security within the project area.

The proposed reconstruction of 30 miles of roads that are currently in a stored condition would have minimized sediment potential through the use of design features and best management practices See hydrology report for more information). There are no fish bearing streams within close proximity to the roads to be reconstructed and there would likely be undetectable sedimentation to fish habitat due to this proposed activity. Once these roads are returned to a stored condition, eliminating vehicle traffic, adding more frequent drainage structures (such as waterbars), and an increase in road surface vegetation would virtually eliminate long-term sediment delivery. In terms of modeled sedimentation to streams within the Pete King drainage, Robinson 2020 provided the following information in table (3).

Table 3. Sediment Delivery from Reconstructed Stream Crossings.

Stream	Sediment Delivery (tons/year)	Sediment Delivery (tons/acre/year)	% Increase Over Natural
Pete King Creek below West Fork Pete King Creek	0.9	<0.01	0.1%
West Fork Pete King Creek	0.3	<0.01	0.2%
Walde Creek	0.2	<0.01	0.1%
Placer Creek	<0.1	<0.01	<0.1%
Nut Creek	<0.1	<0.01	0.1%

Although maintenance and reconstruction activities could increase sediment production in the short-term (that is, days to weeks), design features and best management practices would be used to achieve the Riparian Management Objectives and meet the intention of the Idaho Forest Practices Act (IDAPA 20.02.01) and the Soil and Water Conservation Handbook (Forest Service Handbook 2509.22) (See Hydrology Report for more information (E5.H36). Robinson 2020, concludes that the long-term benefits and sediment reduction achieved by improving drainage and armoring road surfaces would outweigh any short-term increases in sediment delivery as a result of maintenance activities.

Environmental Effects of Log Haul

Road maintenance would improve drainage by replacing, upgrading, or installing new culverts, and/or cleaning and armoring ditches where necessary along haul routes. Reducing long-term chronic sediment delivery sources to streams and the risk of road fill failures would constitute an important improvement to fish habitat quality and security within the project area. Very few of the roads to be used for log-haul are near streams with fish habitat (E5.H36 and E5.F15 and 20). Outside of the project area (Pete King Watershed) there would likely be log-haul in the Yakus Creek drainage. Log-haul near fish habitat along this route would be minimal (less than 0.2 miles) and would no detectible sedimentation given BMP's and design features. Sediment from log-haul would be controlled using best management practices such as maintaining the road surface to provide proper drainage and prevent excessive erosion (BMPs #15.02, 15.06, & 15.09) and suspending construction and haul during wet conditions (BMPs #15.04 & 15.23). Effects to fish from log-haul is not expected but nonetheless will be further discussed in the BA (E5.F15) to address potential effects to ESA listed Steelhead and it's Critical Habitat.

Environmental Effects of Gravel Pit Development

The proposed use of the existing Jungle Point gravel pit adjacent to FSR 5513 pit would not affect sediment delivery to streams because the pit is well away from streams and other waterbodies and would therefore have no effects on fish or fish habitat. The aggregate source from this pit would be used for road maintenance, reconstruction, and construction activities. The access road would also be used for log-haul from nearby units and would have maintenance performed to minimize sediment delivery to streams along the route. There is no fish habitat reaches adjacent to or near this access route.

Environmental Effects of Timber Harvest and Site Preparation Activities

There is not a high probability of sedimentation from timber harvest activity and Sediment delivery would be considered undetectable and negligible according to the Pete King Hydrology Report. Therefore there would be an undetectable change in sedimentation to streams and fish habitat in the project area.

Environmental Effects of Prescribed Burning

There is not a high probability of sedimentation from prescribed burning activities and sediment delivery would be considered undetectable and negligible according to the Pete King Hydrology Report. Project design criteria would require that prescribed fire within Riparian Habitat Conservation Areas meet Riparian Management Objectives and have minimal impacts on stream shading and sedimentation (Design Features). There would be no ignition of prescribed fire within RHCA's however fire may be allowed to back into RHCA's creating a mosaic.

Robinson 2020 explains that using required design features would limit the fire severity and subsequent consumption of litter and reduction of surface roughness which traps sediment before it is delivered to the streams. The bank-stabilizing properties of riparian vegetation would be preserved, and vegetation would recover quickly. Specific criteria in the burn plans would limit the severity of fires such as: constraints on fuel, duff, and soil moistures; weather conditions, such as relative humidity; areas to exclude ignition; etc. Fire intensity would be controlled and adjusted during implementation by modifying the pattern of ignition. Additionally, burns would be initiated either in the spring when conditions are relatively wet or a short time before wet weather is expected in the fall. Prescribed fire treatment units would be completed in pieces over a time span as long as 10 years, as favorable burning conditions occur (Hydrology report).

Effects to Riparian Zone Function, Stream Channels and Large Woody Debris - (Fish Habitat)

Under the Proposed Action alternative, riparian Zone Function and Stream Channels would remain unchanged from the existing condition. Changes to peak stream flows appear to contribute relatively little to channel stability or instream sediment dynamics (Hydrology Report).

Overall, analysis area stream channels and contained fish habitat were found to be stable, resilient, and well vegetated maintaining moderate amounts of LWD and other stabilizing structures, such as boulders and larger angled rock supported by vertical bed rock controls (E5.F16). Furthermore the project area stream channels appear to have maintained stability and resiliency over time given the well vegetated stream banks, abundant in channel LWD structure that has evidently remained intact and in place within the channel overtime (E5.F16).

Point bars and substrate appear to have had little movement or disturbance over time given the abundant substrate mosses and other riparian plant growth in these areas. Because of the project area streams stable conditions and inherent resiliency to flow fluctuations, stream channel conditions would likely remain unaffected by water yield/peak fluctuations that are currently occurring given the exclusion of a stand replacing wildfire.

Large wood in streams improves complexity (i.e. pools, food source, cover, and channel stability, substrate sorting, spawning and rearing) of beneficial aquatic habitat and is largely a product of an intact and properly functioning riparian area. Under the Proposed Action alternative, existing riparian areas and fish habitats in the project area are expected to be maintained and continue to function naturally. As a result, a measurable decrease in the quality or quantity of large wood in project area streams is not expected to occur.

Under the Proposed Action alternative, riparian Zone Function and Stream Channels largely maintained in the existing stable conditions. Although the project may slightly increase peak flows, changes to peak stream flows appear to contribute relatively little to channel stability or instream sediment dynamics (Hydrology Report). Peak flow changes are expected to be minimal and ultimately undetectable.

For the Pete King Project, according to Robinson 2020 (E5.H36), it is unlikely that a temporary, undetectable increase in peak stream flow magnitude would affect stream channel integrity. Increases to peak stream flows would have a temporary, negligible effect on the integrity and equilibrium of project-area streams, thereby complying with the Forest Plan.

Stream channels and fish habitat within the Pete King watershed should continue to be maintained (see Existing Conditions Section) and should continue to function properly and maintain stability.

The project hydrologist and fisheries biologist assessed these reaches between 7/15 and 7/18/2019 and determined that they are currently stable and functioning properly despite the current elevated peak stream flows (E5.F16). This situation is expected to be maintained.

Changes to habitat connectivity (Barriers)

No roads or stream crossing would be built with the proposed action. There are no man-made fish barriers within the project area. This would remain the same with the Proposed Action Alternative. Native fish in the project would have access to all naturally available habitats.

Cumulative Effects of the Proposed Action

When considering the influences from direct and indirect effects of the action alternative, in conjunction with effects from past, ongoing, and reasonably foreseeable activities, the cumulative effects are not expected to substantially change the existing trend for the fisheries resource in the cumulative effects area

Design features for fisheries, especially PACFISH RHCA buffers and PACFISH standards and guides, and for water quality and soils would substantially reduce or eliminate the potential for sediment generation and its movement into stream channels. Any effects from sediment to stream habitats would be undetectable spatially or temporally at the project area or analysis area scale (watershed). As a result, there would not be any detectible cumulative effects to aquatic habitats.

Conclusions

The Forest Service will use best management practices shown to be effective in greatly reducing the potential for erosion and sedimentation to streams. All streams and stream riparian areas on the NP-CNF are protected under the INFISH/PACFISH-amended Forest Plan with Riparian Habitat Conservation Areas (RHCAs). The default dimensions of these RHCAs vary with stream type, with fish bearing (FB) perennial streams afforded 300-foot buffers, non-fish bearing (NFB) perennial streams 150-foot buffers, and NFB intermittent streams in the Pete King drainage with 100-foot buffers.

Timber harvest and yarding, would be prohibited in the RHCA's and this would greatly limit direct effects to individual fish or fish habitat. RHCA implementation should reduce or eliminate potential effects to large woody debris recruitment, and fine sediment transmission. This is because RHCAs are intended to protect vegetation, soil, microclimate, and other components of riparian habitat, both for the sake of the riparian areas and their flora and fauna, but also to protect waterbodies and their biota.

In addition to protecting habitat within the RHCAs, INFISH/PACFISH (USDA FS 1995a) notes that the vegetation and debris within riparian buffers act as "filter strips" that are generally effective in protecting streams from sediment carried by non-channelized flow. Because of PACFISH/INFISH buffers, most of the soil disturbed by the proposed activities would be scores or hundreds of feet or more from stream channels. Vegetation, downed woody material, duff, or topographical features should intercept and stabilize most or all mobilized soil before reaching a stream. NP-CNF monitoring has shown that default RHCA buffers are very effective in eliminating impacts on stream channels (Smith 2015, 2016) and BMP and PIBO monitoring (E5.F4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 16).

Monitoring shows that the Forest Service effectively uses best management practices (Stone & Hess, 2016) and that site-specific best management practices minimize road-related sediment delivery to streams and subsequent effects to water quality and the aquatic environment (Arismendi et al., 2017; Cristan et al., 2016; Edwards et al., 2016; Ice et al., 2004; Seyedbagheri, 1996; Sugden, 2018). The widespread application of best management practices over time appears to lead to watershed-scale improvements in water quality (Reiter, Heffner, Beech, Turner, & Bilby, 2009). As a result, although there would be short-term, localized sediment delivery focused around stream crossings, sediment delivery from road-related activities would be undetectable at the subwatershed scale, thereby having a negligible effect on water quality.

Delineation and compliance with PACFISH/INFISH, a component of the Clearwater Forest Plan, is intended to reduce or eliminate the potential for adverse effects to non-anadromous fish and other aquatic organisms. The specific RHCA buffers for timber harvest have been monitored on the Nez Perce-Clearwater National Forest (NP-CLW) and have been found to be effective in meeting the objective (Smith 2015, 2016) and BMP and PIBO monitoring (E5.F4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 16).

It is likely that in-stream sedimentation conditions have improved over that past several decades with the stabilization of road segments (65 miles of road obliteration decommission or closure since the mid 1980's) that historically were chronic sediment sources and the continued maturation of Riparian Habitat Conservation Areas (see existing conditions section). Sediment traps place within the drainage has likely also helped reduce stream sedimentation throughout the watershed.

The Proposed Action has been designed to protect water quality and the beneficial uses of water and to maintain the integrity of streams through the use of Riparian Habitat Conservation Areas and best management practices. As discussed previously, sediment delivery from project activities would be undetectable at the subwatershed scale (that is, at the mouth of Pete King Creek), thereby having a negligible effect on sediment delivery and water quality and meeting the requirement of "no measurable increase."

Summary of Effects Determination on Aquatic Species

Determination of Effects on Sensitive Species from the Proposed Action Alternative (See Appendix A)

Alternative 2 (Proposed Action) There would be potential negligible effects to westslope cutthroat trout and Spring Chinook/rainbow trout as a result of the proposed activities. The effects are similar to those discussed for steelhead. Although the risk is low, the project may impact individuals based on modeled sediment estimates from the hydrology analysis but would be undetectable, and would not lead to their listing under ESA. With the implementation of the required BMPs and design features shown effective in minimizing sedimentation and erosion it is highly likely that no discernable sedimentation will be delivered to streams. Impairment of water quality at either the site-scale or larger subwatershed scale is not expected. The project would have long term beneficial effects to these species from reduced road-related sediment input to streams (E5.H.36).

WEPP modeling indicate a low probability of sedimentation to streams from harvest activities (see Hydrology Report (E5.H36). Impairment of water quality at either the site-scale/reach or larger watershed scale is therefore not expected because there is a low risk of increased sediment from the proposed activities.

Negative impacts to aquatic habitat could continue to occur as a result of selecting No Action Alternative. These impacts could be significant if a high-intensity fire was to occur in which riparian areas were damaged. But predicting whether such an event will occur in the foreseeable future (10 to 15 years) is problematic. Without repairs to sections of road (E5.H36), impacts to cutthroat and spring/summer Chinook salmon habitat could occur due to sedimentation of stream channels and fish habitat. This could effects individual fish but will not likely lead to a trend that would warrant federal listing of this species.

Determination of Effects on Management Indicator Species from the Proposed Action Alternative
Regarding Management Indicator Species, Table 1, lists each of the aquatic species that have been selected as MIS in the Forest Plan (CNF 1987). Each species was evaluated for its potential to be affected by the proposed project. MIS for the project area is steelhead/rainbow trout based on the Forest Plan and was also analyzed as ESA-listed species (E5.F2 and F15). Based on the analysis presented in this report, selecting the Proposed Action Alternative may impact steelhead habitat and or individuals, although unlikely and would not likely adversely impact the species. (See BA (E5.F15) for more information)

Determination of Effects on ESA Listed Species and Designated Critical Habitat from the Proposed Action Alternative (See BA E5.F15)
No adverse effects to ESA listed species, their designated critical, or Regional Forester sensitive species, are expected from proposed activities due to the activity locations in relation to ESA listed species habitat, implementation of PACFISH buffers, design features and BMPs on which activities are proposed. Monitoring has shown the buffers and BMP to be effective in minimizing delivery to streams. This determination is based on the negligible amounts of sediment that could be generated and delivered to streams from project activities (Hydrology Report). Steelhead trout critical habitat located in the project area is found in Pete King Creek Watershed which includes habitat in Nut Creek, Placer Creek and the Pete King Creek main-stem, although fish distribution is likely greatly limited due to small stream size and higher than preferred stream gradients in Nut and Placer Creek. Bull trout critical habitat exists within the Locsha River and Clearwater River; however no effect to bull trout would occur as there are no proposed activities within several miles of bull trout Critical Habitat. (A detailed analysis of effects to listed steelhead, will be completed and can be found in Pete King Project Biological Assessment (E5.F15).

The retention of RHCAs adjacent to timber harvest units is designed to protect both the steelhead and their designated critical habitat through the retention of all riparian vegetation as previously discussed. No adverse effects from timber harvest units or temporary road construction to listed species or their habitat are expected. This is based on local monitoring efforts (Smith, K. 2016) which shows no sediment delivery to streams from these activities as well as other monitoring previously discussed. In short, no delivery mechanism for sediment transport has been observed. See Design Feature Effectiveness previously discussed under the effects of the proposed action alternative for more discussion. BMP implementation is expected to minimize sediment impacts of log haul to adjacent creeks (this adjacency is minimal >0.2 miles) (PF).

/s/ Tim Price
Fisheries Biologist
4/17/2020

Consistency with Regulatory Framework

The Proposed Action has been reviewed and is determined to be in compliance with the management framework applicable to water resources. The laws, regulations, policies, and forest plan direction applicable to this project and resources are as follows:

Land and Resource Management Plan

Clearwater Forest Plan

A detailed analysis of how the Proposed Action is consistent with the Forest Plan related to fisheries is available in (E5.F1 and F2).

Forest Plan Stipulation Agreement

Litigation on the Forest Plan resulted in a 1993 Stipulation Agreement that discusses what type of activities the Forest could proceed with and under what conditions (E5.H36) . The Agreement states "The Forest Service agrees to proceed only with those projects that would result in no measurable increase in sediment production in drainages currently not meeting Forest Plan standards." Although Pete King Creek meets the Forest Plan water quality criteria in Appendix K, it does not meet the Desired Future Condition for cobble embeddedness based on 2019 stream survey data discussed in the existing conditions section, and the Proposed Action is therefore subject to no measurable increase in sediment in accordance with the 1993 Forest Plan Stipulation Agreement

RHCA's would provide a vegetative filter strip adjacent to the proposed timber harvest and prescribed fire activities, minimizing sediment delivery to streams. Project Design Features (EA and E5.H36) and site-specific best management practices (Hydrology Report) would minimize sediment delivery from road-related activities and reduce sources of chronic and long-term sediment delivery to streams. As a result, sediment delivery from the proposed forest management and road-related activities would be undetectable and meet the conditions of the Stipulation Agreement (see Hydrology Report E5.H36).

Federal Law

Endangered Species Act (ESA)

Section 7 of the ESA requires Federal agencies to consult with the U.S. Fish and Wildlife Service and NOAA to insure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or destroy or adversely modify their critical habitat.

The US Fish and Wildlife Service species list accessed on September 15, 2016 *(https://ecos.fws.gov/ipac/)* identified bull trout as the only threatened resident fish species under the ESA within Idaho. The NOAA Fisheries list was accessed on the same date and identified Snake River steelhead trout and fall chinook as threatened under ESA (*http://www.nmfs.noaa.gov/pr/pdfs/species/esa_table.pdf*). In accordance with applicable requirements of section 305(b) of the Magnuson-Stevens Act and its implementing regulations (50 CFR Part 600.920), the Forest needs to evaluate potential effects of the proposed projects on these species. Essential Fish Habitat (EFH) for salmon also occurs within the project area and must be considered. Consultation with the two agencies is required for projects affecting these species. The project would be designed to have no adverse effects on listed species or their habitat. (See for official Aquatics Species BA E5.F15 and Concurrence Letter).

Regional Forester Sensitive Species: Since the Nez Perce Forest Plan was published in 1987, the Regional Forester has approved an updated sensitive species list for the Forest (June, 2008). The list can be found at *http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5366363.pdf*. This list includes four fish species including westslope cutthroat trout, interior redband trout, Snake River spring Chinook salmon, and Pacific lamprey. The western pearlshell mussel was added in 2010. A Biological Evaluation is required, and this analysis will serve as such, to determine the effects of the project on these species.

Regulatory Compliance: See the determination section above and the Aquatics BA (E5.F15) associated with this project. ESA-listed and sensitive fish species and their habitat are extraordinary circumstances that occur within the project area but not within vegetation treatment activity areas. The treatment activities associated with this project are not expected to have adverse effects on ESA-listed and sensitive fish species and their habitat due to BMP and design feature implementation coupled with the overall existing habitat conditions. Sediment effects from the proposed activities may occur, although the level of effects are likely minimal. Table 1 lists the current status of ESA-listed and sensitive fish species associated with analysis area.

Clean Water Act

The Clean Water Act requires that the states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. Stipulations in the Clean Water Act require the Environmental Protection Agency and the States to develop plans and objectives that will eventually restore identified stream segments of concern. The Clean Water Act requires all water bodies that are deemed to be not fully supporting their beneficial uses by the state (Idaho) to be brought onto the 303(d) list as water quality limited. For waters identified on this list, states must develop a Total Maximum Daily Load for the pollutants set at a level to achieve water quality standards. This project would comply with the Clean Water Act (E5.H36). Riparian Habitat Conservation Areas would maintain shade-producing vegetation over streams, thereby complying with the Lochsa River Subbasin Temperature Total Maximum Daily Loads (State Technical Services Office, 2012).

National Forest Management Act

Section 6 of the National Forest Management Act provides language to "insure that timber will be harvested from National Forest System lands only where soil, slope, or other watershed conditions will not be irreversibly damaged; protection is provided for streams, stream-banks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where harvests are likely to seriously and adversely affect water conditions or fish habitat; and that such [harvests] are carried out in a manner consistent with the protection of soil, watershed, and fish resources."

Regulatory Compliance: The project will not cause irreversible damage to watershed conditions or fish habitat as a result of project design criteria and BMP implementation. Harvests will be carried out in a manner consistent with the protection of soil, watershed, and fish resources through the application of project design criteria, BMPs, and standard timber sale contract provisions.

Relating to aquatics resources, the project will be consistent with applicable Forest Plan components as documented in this report.

Timber harvest, site preparation activities, prescribed fire treatments, and road-related activities were developed to maintain stream and watershed conditions by incorporating PACFISH Riparian Management Objectives, Riparian Habitat Conservation Areas, design features, and best management practices to maintain water quality and channel processes, thereby complying with the National Forest Management Act.

PACFISH Guidance

PACFISH (USDA Forest Service 1995) guidance has been incorporated into the Forest Plan and is therefore addressed under Forest Plan consistency (E5.F1).

Executive Orders

Invasive Species, EO 13112 of February 3, 1999

Federal Agency Duties. (a) Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law, not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm would be taken in conjunction with the actions.

Recreational Fishing Opportunities, EO 12962 of September 26, 2008.

Federal Agency Duties. Federal agencies shall, to the extent permitted by law and where practicable, and in cooperation with States and Tribes, improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities by one or more methods identified under this executive order.

Executive Orders 11988 and 11990

Executive Order 11988 (Protection of Floodplains) requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

Executive Order 11990 (Protection of Wetlands) directs federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

The Proposed Action is consistent with the executive orders regarding floodplains and wetlands. This project does not propose development within wetlands or floodplains. Further, it incorporates specific design features (EA and E5.H36) and best management practices which would protect these resources (E5.H36).

State and Local Law

Idaho Forest Practices Act

The Idaho Forest Practices Act regulates forest management on all ownerships in Idaho, including National Forest System lands (Title 38, Chapter 13, Idaho Code 2000). The Forest Service has agreements with the state to use best management practices for all management activities (E5.H36).

Best management practices are included in the Proposed Action, and all activities would comply with the Idaho Forest Practices Rules and the guidelines in the Soil and Water Conservation Handbook (Forest Service Handbook 2509.22). A recent audit of best management practices pertaining to water quality indicates that the Forest Service averaged 99 percent compliance with best management practices rules since 1996 and documents that best management practices are effective when properly installed (Stone & Hess, 2016).

Idaho Stream Channel Protection Act

The Idaho Stream Channel Protection Act requires that the stream channels of the state and their environment be protected against alteration for the protection of fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, and water quality. The Stream Channel Protection Act requires a stream channel alteration permit from Idaho Department of Water Resources before any work that would alter the stream channel may begin.

The 2018 Memorandum of Agreement/Understanding between the Forest Service and the Idaho Department of Water Resources allows certain projects to proceed without a permit if they meet the Department’s Minimum Standards and the Forest Service sends out advance notification (Project File E5.H36). The proposed installation/replacement of stream crossing culverts would meet or exceed the Minimum Requirements under the Stream Channel Protection Act, thereby complying with the Act.

Regulatory Compliance: Stream channels will be protected against alteration by the application of project design criteria, other site-specific BMPs including PACFISH/INFISH buffers, and RHCA delineations.

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